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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/809,681	03/26/2004	Shoso Shingubara	925-287	7860

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NIXON & VANDERHYE, PC
901 NORTH GLEBE ROAD, 11TH FLOOR
ARLINGTON, VA 22203

EXAMINER

BAREFORD, KATHERINE A

ART UNIT	PAPER NUMBER
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1792

MAIL DATE	DELIVERY MODE
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11/02/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

<p align="center">Advisory Action Before the Filing of an Appeal Brief</p>	Application No. 10/809,681	Applicant(s) SHINGUBARA ET AL.	
	Examiner Katherine A. Bareford	Art Unit 1792	

--The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

THE REPLY FILED 26 October 2007 FAILS TO PLACE THIS APPLICATION IN CONDITION FOR ALLOWANCE.

1. ☒ The reply was filed after a final rejection, but prior to or on the same day as filing a Notice of Appeal. To avoid abandonment of this application, applicant must timely file one of the following replies: (1) an amendment, affidavit, or other evidence, which places the application in condition for allowance; (2) a Notice of Appeal (with appeal fee) in compliance with 37 CFR 41.31; or (3) a Request for Continued Examination (RCE) in compliance with 37 CFR 1.114. The reply must be filed within one of the following time periods:

- a) ☒ The period for reply expires 3 months from the mailing date of the final rejection.
 b) ☐ The period for reply expires on: (1) the mailing date of this Advisory Action, or (2) the date set forth in the final rejection, whichever is later. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of the final rejection.

Examiner Note: If box 1 is checked, check either box (a) or (b). ONLY CHECK BOX (b) WHEN THE FIRST REPLY WAS FILED WITHIN TWO MONTHS OF THE FINAL REJECTION. See MPEP 706.07(f).

Extensions of time may be obtained under 37 CFR 1.136(a). The date on which the petition under 37 CFR 1.136(a) and the appropriate extension fee have been filed is the date for purposes of determining the period of extension and the corresponding amount of the fee. The appropriate extension fee under 37 CFR 1.17(a) is calculated from: (1) the expiration date of the shortened statutory period for reply originally set in the final Office action; or (2) as set forth in (b) above, if checked. Any reply received by the Office later than three months after the mailing date of the final rejection, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

NOTICE OF APPEAL

2. ☐ The Notice of Appeal was filed on _____. A brief in compliance with 37 CFR 41.37 must be filed within two months of the date of filing the Notice of Appeal (37 CFR 41.37(a)), or any extension thereof (37 CFR 41.37(e)), to avoid dismissal of the appeal. Since a Notice of Appeal has been filed, any reply must be filed within the time period set forth in 37 CFR 41.37(a).

AMENDMENTS

3. ☒ The proposed amendment(s) filed after a final rejection, but prior to the date of filing a brief, will not be entered because
 (a) ☒ They raise new issues that would require further consideration and/or search (see NOTE below);
 (b) ☒ They raise the issue of new matter (see NOTE below);
 (c) ☒ They are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal; and/or
 (d) ☒ They present additional claims without canceling a corresponding number of finally rejected claims.

NOTE: see attached pages. (See 37 CFR 1.116 and 41.33(a)).

4. ☐ The amendments are not in compliance with 37 CFR 1.121. See attached Notice of Non-Compliant Amendment (PTOL-324).
 5. ☐ Applicant's reply has overcome the following rejection(s): _____.
 6. ☐ Newly proposed or amended claim(s) _____ would be allowable if submitted in a separate, timely filed amendment canceling the non-allowable claim(s).
 7. ☒ For purposes of appeal, the proposed amendment(s): a) ☒ will not be entered, or b) ☐ will be entered and an explanation of how the new or amended claims would be rejected is provided below or appended.
 The status of the claim(s) is (or will be) as follows:
 Claim(s) allowed: _____.
 Claim(s) objected to: _____.
 Claim(s) rejected: 1-7.
 Claim(s) withdrawn from consideration: _____.

AFFIDAVIT OR OTHER EVIDENCE

8. ☐ The affidavit or other evidence filed after a final action, but before or on the date of filing a Notice of Appeal will not be entered because applicant failed to provide a showing of good and sufficient reasons why the affidavit or other evidence is necessary and was not earlier presented. See 37 CFR 1.116(e).
 9. ☐ The affidavit or other evidence filed after the date of filing a Notice of Appeal, but prior to the date of filing a brief, will not be entered because the affidavit or other evidence failed to overcome all rejections under appeal and/or appellant fails to provide a showing of good and sufficient reasons why it is necessary and was not earlier presented. See 37 CFR 41.33(d)(1).
 10. ☐ The affidavit or other evidence is entered. An explanation of the status of the claims after entry is below or attached.

REQUEST FOR RECONSIDERATION/OTHER

11. ☒ The request for reconsideration has been considered but does NOT place the application in condition for allowance because: see attached pages.
 12. ☐ Note the attached Information Disclosure Statement(s). (PTO/SB/08) Paper No(s). _____.
 13. ☐ Other: _____.

Advisory Action

Continuation of Box 3 of Advisory Action (PTOL-303): the proposed amendments filed after a final rejection, but prior to the date of filing a brief, will not be entered because:

(a) they raise new issues that would require further consideration and/or search – newly proposed claims 8-13 have a new scope that would require further consideration and/or search by the Examiner. For example, the “barrier metal film” in claim 8 does not have to be mainly comprising tantalum and nitrogen as in claim 1. Claim 8 also requires controlling the composition and the thickness of the barrier film so that after removal of the oxide film the barrier metal film essentially entirely covers the inner wall of the hole portion, which was not previously claimed in claims 1 and 4.

(b) they raise the issue of new matter. In newly proposed claim 8, the “barrier metal film” does not have to be mainly comprising tantalum and nitrogen as in claim 1. However, in the disclosure as originally filed, it appears that it does.

Continuation of Box 11 of the Advisory Action Form (PTOL-303): the request for reconsideration has been considered but does NOT place the application in condition for allowance because: (1) as to the claim objection and 35 USC 112 rejection of claim 5, the proposed amendment does not overcome these objection/rejections because the proposed amendment has not been entered for the reasons addressed at Box 3 above. (2) As to the 35 USC 103 rejections of claims 1-7 (proposed new claims 8-13 have not been entered as discussed in Box 3 above, and thus have not been addressed), using the

admitted state of the prior art in view of Kawanoue, the Examiner has reviewed applicant's arguments, however, the rejection is maintained. First, applicant argues that their invention prevents voids during electroless plating. However, this is not claimed. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). The only question for claim 1 is--when using a tantalum and nitrogen containing barrier film would using the claimed N/Ta ratio be suggested. The Examiner has provided Kawanoue to provide the suggestion of using such a ratio. Applicant has argued that Kawanoue does not provide the electroless plating, so there is no motivation and/or suggestion for the preventing the formation of voids. However, the Examiner notes that the rejection uses the admitted state of the prior art as the primary reference, and as discussed in the Final Rejection of July 26, 2007, this reference teaches both the electroless plating of copper and the sputtering application of tantalum and nitrogen in the form of tantalum nitride films as the barrier metal film underlying the copper plating. The Examiner has provided Kawnoue as providing that, as discussed in the Final Rejection of July 26, 2007, sputtered tantalum nitride films barrier metal films over which copper is to be applied can desirably have an N/Ta ratio of 0.87. It would be suggested to use such an N/Ta ratio in the process of the admitted state of the prior art in order to provide a desirable metal barrier film protective action, as discussed in the Final Rejection of July 26, 2007. It is not required that the references teach that this usage is for preventing the formation of voids,

because (1) it is not claimed as discussed above, and (2) furthermore, even if the prevention of voids was claimed, the fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985). As to claim 4 requirement that the removal of the oxide film leave a barrier metal film thickness that entirely covers the inner wall of the hole portion, the Examiner notes that as discussed in the Final Rejection of July 26, 2007, it would also have been obvious to modify the admitted state of the prior art to perform the removal step such that the barrier metal film is left in such a manner that it entirely covers the inner wall of the hole portion when copper coating is performed as suggested by Kawanoue in order to provide a desirable copper plating, because the admitted state of the prior art provides applying a barrier film to hole walls and etching the barrier film (to remove oxide) prior to applying copper and Kawanoue teaches that it is well known when applying a barrier film to hole walls prior to applying copper, to have the barrier film covering all of the hole walls before when applying the copper. (3) As to the 35 USC 103 rejection of claim 5 using the Wang Suppression Article, this is maintained, as the proposed amendment to claim 5 has not been entered as discussed in Box 3 above.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katherine A. Bareford whose telephone number is (571)

272-1413. The examiner can normally be reached on M-F(6:00-3:30) with the First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on (571) 272-1423. The fax phone numbers for the organization where this application or proceeding is assigned are (571) 273-8300 for regular communications and for After Final communications.

Other inquiries can be directed to the Tech Center 1700 telephone number at (571) 272-1700.

Furthermore, information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


KATHERINE BAREFORD
PRIMARY EXAMINER